OCTOBER 2017 E.B 2017-06

CASE STUDIES OF SUPERMARKETS AND FOOD SUPPLY CHAINS IN LOW-INCOME AREAS OF THE NORTHEAST:

BALTIMORE STORE 1, MARYLAND

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This research was supported by USDA-NIFA AFRI Grant #2011-68004-30057:
Enhancing Food Security in the Northeast through Regional Food Systems,
a joint project of 11 institutions led by the Northeast Regional Center for Rural Development.

Case Studies of Supermarkets and Food Supply Chains in Low-Income Areas of the Northeast: Baltimore Store 1, Maryland. By Kristen S. Park[1,4], Miguel Gómez[2], Kate Clancy[3], Extension Bulletin 2017-06. Charles H. Dyson School and Applied Economics and Management, College of Agriculture and Life Sciences, Cornell University, Ithaca, NY 14853.

Acknowledgements

This case study was conducted as part of a U.S. Department of Agriculture funded project titled "Enhancing Food Security in the Northeast through Regional Food Systems" (EFSNE). This seven-year research, education, and outreach project examines food production, distribution, and consumption in the Northeast U.S. (defined as 12 states from Maine to West Virginia and the District of Columbia) with the goal of understanding the potential for regional food systems to address food security challenges in the region. The project includes collaborators from 11 different universities and other institutions. As part of the project's distribution, consumption, and outreach objectives, five urban and four rural study locations in the Northeast have been identified for community- and store-level analysis.

The authors would like to acknowledge the enormous contributions of the store participants. In addition we would like to thank the EFSNE project investigators for their support to the case studies and to Elaine Hill, Bobbie Smith, III, Irin Nishi, Susan Parker, Derek Simmonds, and Dan Kane for their interviews and data collection efforts.

This work was supported by USDA grant #2011-68004-30057

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Introduction

As part of a collection of EFSNE projects that examined distribution systems, 11 store case studies were conducted to gain a better understanding of stores serving low-income areas and their role in the regional food system of the Northeast. The cases are an effort to record important characteristics of the participating stores and their supply chain partners. This case describes a supermarket and with it the supply chains of two of the eight foods in the EFSNE project's market basket, which served as a focal point for many of its research activities. Case study interviews were conducted 2012-2014. Fictitious names are used to maintain confidentiality of the case study participants.

> "Over 40 percent of the individuals in the neighborhood are impoverished."

Place: Baltimore, MD

The case study supermarket is located in a Baltimore neighborhood[1] with a population of 24,876 (Table 1) and a median household income of $25,217, almost one-third of the median household income for Maryland which is $74,149. Over 40 percent of the individuals in the neighborhood are impoverished. The neighborhood has a large African-American population (75.7 percent) relative to the rest of the state (31.1 percent).

The U.S. Census Bureau reports 29 grocery stores, excluding convenience stores, eight convenience stores, and no warehouse clubs or supercenters in the neighborhood. The neighborhood contains 11.7 grocery stores and 3.2 convenience stores per 10,000 residents. The concentration of food retailers per 10,000 persons is included in Table 1 to illustrate how this compares to the county and state metrics.

Supermarkets and other grocery stores sell a variety of foods, such as canned and frozen foods; fresh fruits and vegetables; and fresh and prepared meats, fish, and poultry. Supermarkets are traditionally defined in the food retail industry as large grocery stores having $2 million or more in annual sales. Convenience stores or food marts (except those with fuel pumps) primarily engage in retailing a limited line of goods that generally includes milk, bread, soda, and snacks.

[1] The neighborhood is defined as the zip code that contains the store.

TABLE 1: Demographic and Food Environment Statistics for Baltimore Store 1

	Neighborhood zip code	Baltimore	Maryland
DEMOGRAPHICS			
Population and Age			
Population[1]	24,879	817,720	5,887,776
Median age[1]	32.7	39.1	38.1
Less than 5 years of age[a,1]	8.4%	6.0%	6.2%
Average household size[1]	2.8	2.54	2.67
Education			
High school degree or higher[a,1]	67.8%	90.2%	89.0%
Bachelor's degree or higher[a,1]	10.3%	36.0%	37.3%
Race and Ethnicity			
African American or Black[a,b,1]	75.7%	28.2%	31.1%
Hispanic[a,c,1]	4.4%	4.6%	8.8%
Poverty and Program Participation			
Poverty rate[a,1]	42.3%	9.1%	10.0%
Food insecurity rate[a,2]	12.9%	12.7%	13.4%
Share SNAP recipients[a,d,1,3]	N/A[e]	13.4%	13.4%
Income			
Median household income[1]	$25,217	$66,940	$74,149
FOOD ENVIRONMENT			
Grocery stores[f,4]	11.7	1.9	2.1
Convenience stores[f,4]	3.2	3.2	1.2
Warehouse club, and supercenters[f,4]	0.0	0.1	0.1

Notes:
[a] Percentage of entire population.
[b] Alone or in combination with other races.
[c] Of any race.
[d] Calculated by dividing the number of SNAP recipients by the population.
[e] Data not available at the zip code level.
[f] Number per 10,000 people.

Sources:
[1] American Community Survey 5-Year Estimate, 2010 - 2014, copied from http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml on April 27, 2016.
[2] Food insecurity, 2013, FeedingAmerica.org, downloaded from http://www.feedingamerica.org/hunger-in-america/our-research/map-the-meal-gap/data-by-county-in-each-state.html on April 27, 2016.
[3] Small Area Income and Poverty Estimate, July 2013, downloaded from http://www.census.gov/did/www/saipe/data/model/tables.html on April 27, 2016.
[4] County Business Patterns Database, 2013, downloaded from https://www.census.gov/econ/cbp/download/13_data/ on April 29, 2016. Currently online at https://www.census.gov/data/datasets/2013/econ/cbp/2013-cbp.html.

“Store sales excel.”

Baltimore Store 1

The store is an independently owned supermarket. The owner has had the store for four years and describes it as a full-service discount supermarket[2]. Annual sales are approximately $28 million. The owner also operates a small grocery wholesale business, City Grocery Wholesaler, that supplies corner grocery stores, restaurants, convenience stores, and other businesses buying food in quantities too small to be served by larger wholesalers. This wholesale business is one of the store's major suppliers. A large wholesaler, Multi-Regional Wholesaler, supplies the owner's wholesale company in turn, as well as Baltimore Store 1.

The store is 40,000 square feet total, roughly average in size (Table 2). Store sales excel. Weekly sales and weekly sales per square foot are well above the industry average. Weekly sales per full-time equivalent, too, are estimated as being well above industry average.

The store has 27 full-time and 98 part-time staff. All full-time staff can receive benefits and 96 percent of them take this option.

TABLE 2: U.S. Store Operations versus Baltimore Store 1

	Baltimore Store 1	2011 U.S. average
Store selling space	36,000 sq ft	33,320 sq ft
Weekly sales	$538,461	$307,306
Weekly sales per sq ft of selling area	$14.96	$9.22
Weekly sales per full-time equivalent employee	$7,085 est.	$4,519

Source: Progressive Grocer, “79th Annual Report of the Grocery Industry.” April 2012.

Fresh meat is the largest food department and accounts for 20.4 percent of store sales, a much higher contribution than the industry average of 13.7 percent (Table 3). The produce department, however, only accounts for 5 percent of store sales and this is much lower than the industry average. These departments are important profit drivers with high gross margins. They are also very important to customers. According to the Food Marketing Institute's 2014 Shopper Trends report, when consumers were asked the importance of features when selecting their primary store, they answered, “high quality fruits and vegetables” as the leading feature and “high quality meat” as the third feature behind “low prices”.

[2] Although this case study is written in present-tense, it is meant to provide a snapshot in time, and the authors make no claims that the data reflect anything other than the store's situation in 2012.

TABLE 3: Percent of Store Sales by Various Departments and Categories

	Percent of store sales	
Department or Category	**Baltimore Store 1[1]**	**Industry average[2]**
Produce	5.0	11.0
Fresh Meat (incl. poultry)	20.4	13.7
Fluid Milk	2.8	2.5
Canned fruits and vegetables	5.3	1.0
Frozen fruits and vegetables	2.5	1.0
Bread (loaf/bagged, not bakery goods)	1.8	3.0

[1] Case study interview
[2] *Progressive Grocer,* Consumer Expenditures Study, 2012

The store's overall operating gross margin, the difference between the purchase price and selling price divided by the selling price, is 24 percent, lower than the industry average. Gross margin is an important measure of the margin available to pay for all operations above and beyond the cost of the product. The 2015 median gross margin for supermarkets reported by the Food Marketing Institute is 28 percent[3].

Sales have been growing and the owner expects to still be in business 10 years from now. Some factors that he believes are important to the future of the store include municipal laws and regulations, safety and security around the store, being able to access labor as they have high turn-over, any federal policy that reduces Supplemental Nutrition Assistance Program (SNAP) benefits, and the variability of demand due to how SNAP benefits are distributed through the month. The owner reports that 53 percent of the store's sales are SNAP sales.

The store owner feels that most regionally produced fresh products are fairly easy to acquire within season, but that meat was the product that was not economically viable to procure regionally. Any limitations he feels are seasonality of regionally produced food or lack of year-round availability, availability of products themselves, and proximity to suppliers.

When asked if there were any factors limiting his ability to procure more healthy foods, the owner reported that lack of demand was a major limitation.

Market basket items – Bread and Potatoes

White bread accounts for 90 percent of the store's bread sales, while 100% whole-grain bread that is WIC-approved accounts for less than one percent. The 100% whole-grain bread sold by the store

[3] *The Food Retailing Industry Speaks 2016*. The Food Marketing Institute. Arlington, VA 22202.

> “Baltimore Store 1 buys 85 percent of its bread from a regional bread manufacturer.”

can be up to three times the price of a loaf of white bread. Although this may be a deterrent for some of the population, WIC-approved items, such as the 100% whole-grain bread, are free to WIC participants. All of the bread comes from suppliers in the state.

Eight percent of the store's produce department sales are for fresh potatoes. About 50 percent of the potatoes come from the Northeast while the remaining 50 percent come from outside the region.

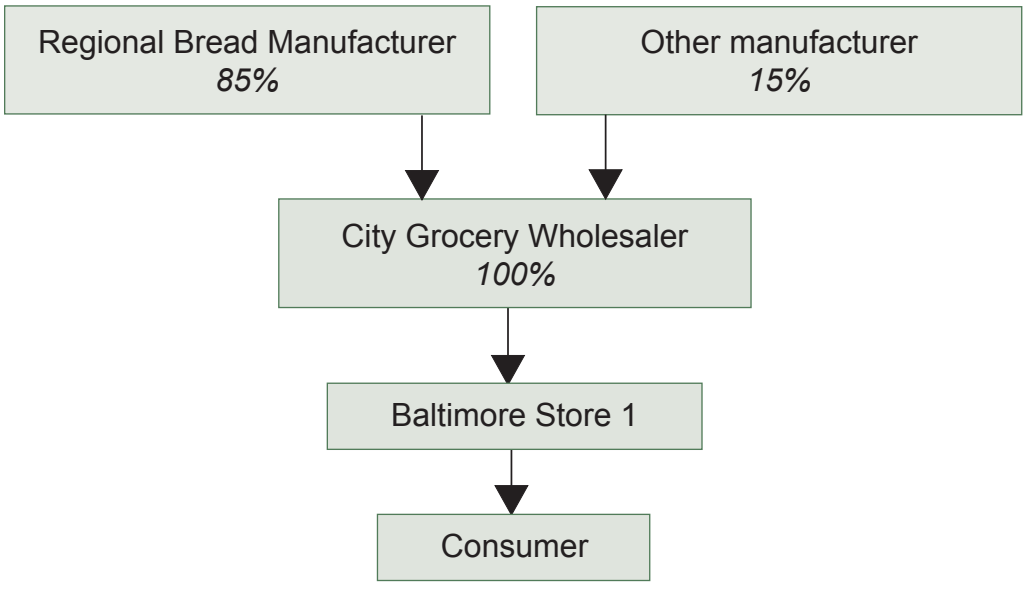
Supply Chains

We traced the supply chains of two of our market basket products sold by Baltimore Store 1, bread and potatoes, to determine the sources of these foods and the extent of regional food system participation.

Product 1: Bread

Baltimore Store 1 buys 85 percent of its bread from a regional bread manufacturer. Figure 1 depicts the general supply chain for Baltimore Store 1's bread. Starting at the store and tracing back the supply chain, the boxes upstream indicate the percent of the downstream member's total purchases. For example, Baltimore Store 1 buys all of its bread from City Grocery Wholesaler, the company owned by the store owner, which purchases 85 percent of its bread from Regional Bread Manufacturer and the remaining 15 percent from Other (also located in the Northeast).

FIGURE 1: Bread Supply Chain for Baltimore Store 1



Note: Shaded boxes represent supply chain members located in the Northeast Region. Numbers in boxes represent the percent of the next member's supply.
Source: Author's calculations based on case interviews.

The store has purchased bread from its main bakery supplier for about five years. It orders online six days of the week and picks up orders from the plant. Prices are negotiated and payment is due in 21 days. The supplier collaborates on marketing programs for the store.

The owner is satisfied with their bread supplier-manufacturer on product assortment and quality, terms of payment, and proximity.

Regional Bread Manufacturer

This regional bread manufacturer has been in business over 100 years and is one of the largest independent bakeries in the U.S. It has two bakeries, both of which are located in the Northeast region, and 11 distribution centers around the mid-Atlantic region. It provides direct store delivery (DSD) for retail supermarkets, foodservice accounts, and schools/universities predominantly. Its product line includes many various breads, rolls, buns, muffins, bagels, and pastries.

The bakery uses the wheat futures market to hedge on the price of flour supplies. The company will buy futures depending on the terms of the futures and the company's prediction on what the wheat, and ultimately the flour, prices will be.

The bakery does not know where the wheats for its flours come from. In general, mills may have pre-mixes to sell to bakeries. Regional Bread Manufacturer buys a proprietary mix.

The company receives daily deliveries of supplies but has enough storage for about one week of supplies.

Regional Comparisons

In this section we examine one bread supply chain for Baltimore Store 1.

Table 4 presents the price margin[4] per pound received by the retailer. In addition, it shows the percent of total or proportion of the retail price received. We note that the margin is what is left to pay for all other business expenses and profits, including marketing and transportation. It is not an indication of profitability.

Regional Bread Manufacturer's price margin and percent of retail price for the lowest-priced white bread is less than the price margin and percent of retail price for the highest-priced 100% whole-grain bread. Conversely, the store receives a greater percent of retail (32 percent) from white bread but a greater absolute margin ($0.72) from the 100% whole-grain bread.

[4] Price margin is defined here is the sale price minus the purchase price.

TABLE 4: Allocation of Retail Price in Baltimore Store 1's Bread Supply Chain[1]

	Regional Bread Manufacturer			
	White bread		WIC-approved 100% whole-grain bread	
Supply chain segment	Price margin ($/lb)	% of retail price	Price margin ($/lb)	% of retail price
Regional Bread Manufacturer	0.60	68.0	2.60	78.3
Transport (pick up at factory)	NA	NA	NA	NA
City Grocery Wholesaler & Baltimore Store 1[1]	0.28	32.0	0.72	21.7
Total Retail Price	**0.89**	**100.0**	**3.32**	**100.0**

[1] Price margins and % of retail price for City Grocery Wholesaler and Baltimore Store 1 are combined due to limited data.
NA = Not available.
Source: Author's calculations based on case study interviews.

Table 5 depicts the distance and fuel used to get bread from the manufacturer to the retailer. The regional supply chain from Regional Bread Manufacturer uses 0.01 gallons per hundredweight of product.

TABLE 5: Food Miles and Fuel Use in Baltimore Store 1's Bread Supply Chain

	Food miles	Truck miles[1]	Truck capacity	Fuel use[2]	Fuel use per cwt shipped
Supply chain segment	*number*		*cwt*	*gallons*	
Regional Bread Manufacturer to Baltimore Store 1 (DSD by City Grocery Wholesaler)	18	36	400	3.6	0.01
All segments	18	36		3.6	0.01

[1] Truck miles are equal to food miles when apples travel over 150 miles. Trucks on trips longer than 150 miles will return with a backhaul.
[2] Semi truck used for transporting bread from the manufacturer to the wholesaler have a capacity of 40,000 pounds and obtain 10 mpg.

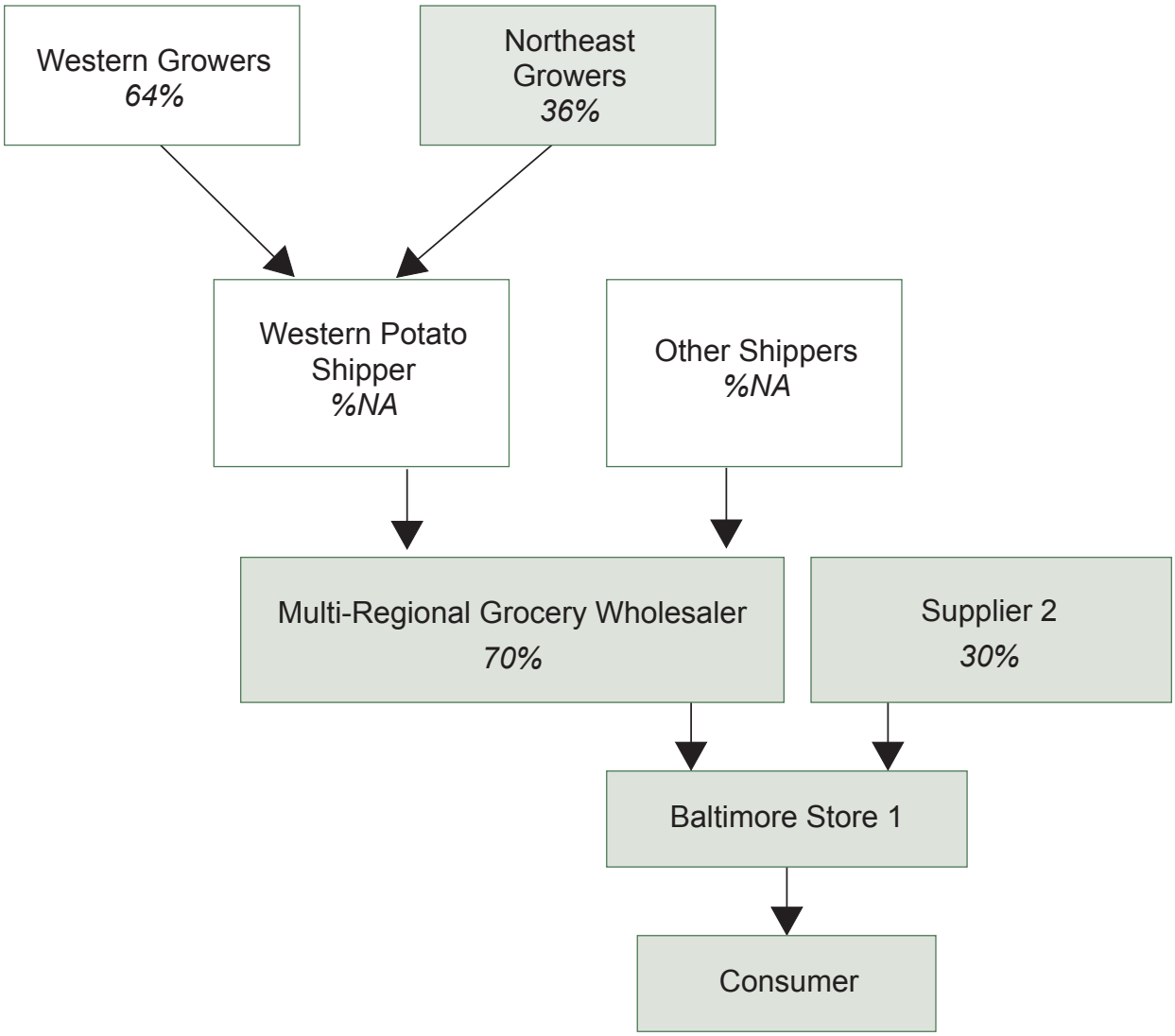
Prospects for Expansion of Regional Food System: Bread

We define a regional supply chain as one where the product is produced, or grown, in the region. Wheat is the primary ingredient for making bread, however the bakeries use many other ingredients as well. While we cannot say that the wheat used to make the bread is from the region, we can say that the manufacturers (the bakeries) are regional, and therefore, all the value-added activities from manufacturing to retail are regional.

Product 2: Potatoes

Baltimore Store 1 buys about 70 percent of its potatoes from its primary grocery wholesaler, Multi-Regional Grocery Wholesaler. It has been sourcing from them for about five years. It buys the other 30 percent from Supplier 2 and has used this supplier for about 15 years. See Figure 2 for a depiction of the potato supply chain for Baltimore Store 1.

FIGURE 2: Potato Supply Chain for Baltimore Store 1



Note: Shaded boxes represent supply chain members located in the Northeast Region. Numbers in boxes represent the percent of the next member's supply.
NA=Not avaiable
Source: Author's calculations based on case interviews.

The store orders potatoes daily and online from its grocery wholesaler and receives deliveries one day later. Payment is made within seven days.

The store owner is generally satisfied with its primary wholesaler's pricing, quality, proximity, timeliness and trustworthiness and is more satisfied with its diversity of products and payment terms.

Multi-Regional Grocery Wholesaler

Multi-Regionial Grocery Wholesaler purchases potatoes from a number of suppliers. One of its primary suppliers is Western Shipper.

Western Potato Shipper

Western Potato Shipper is one of the largest potato shippers in the U.S. It has the ability to ship to large accounts year round. It also works with growers in many areas of the U.S. to fill orders that are closer to those growers. The Northeast supplies 85-90 percent of round white potatoes sold by Western Potato Shipper in the Northeast. If they are in season (meaning available in harvest or from storage) and it makes sense, they will come from the Northeast. This limits food miles and takes advantage of the production near demand. Often, the Northeast grower's label is maintained on the potatoes.

> "The Northeast supplies 85-90 percent of round white potatoes sold by Western Potato Shipper in the Northeast."

In addition, Western Potato Shipper sources 25-50 percent of their russets sold in the Northeast from Northeast growers when they are available.

Western Potato Shipper has used the same growers for over 10 years and develops close relationships with their growers. The shipper has people working with the remote grower-shippers in the packing plant and reviewing quality specifications.

Contracts with Northeast growers are sometimes used, although the contracts usually specify service and quality specifications rather than volume and prices. The shipper might pay Northeast growers using the daily market prices reported by the USDA Agricultural Marketing Service or it might pay a determined price for a specific time period, for example for a month ahead. In addition, the shipper sometimes works with growers to plant specific proprietary potato varieties for certain branded products.

In addition to using Northeast grower-shippers to fulfill orders, Western Potato Shipper will also ship potatoes in bulk to re-packers in some of their Northeast markets. These packers will re-pack potatoes sent in bulk into retail packaging and transport to Western Potato Shipper's customers. These repackers perform some valuable functions, such as removing potatoes damaged during shipment, thus maintaining the quality specifications of

customers. New potatoes, especially, are highly susceptible to bruising and often are repacked before sale.

Repackers can also pack to specific customer quality specifications and maintain timely deliveries to Northeast customers.

Regional Comparisons

In this section we examine two of Baltimore Store 1's potato supply chains supplied through Multi-Regional Grocery Wholesaler.

Table 6 shows the price margin[5] per five-pound bag of russet potatoes received by each member of the supply chains. In addition, it shows the percent of total, or proportion, of the retail price received by each member, using the member's price margin. For example, Shipper is the first member listed in the supply chain. The Agricultural Marketing Service reported shipping price for a five-pound bag of russet potatoes from the Midwest was $1.01. The price from the Northeast was $0.98 and from the West was $0.84. The price margin for the Multi-Regional Grocery Wholesaler varied from $0.55 for potatoes from Western Shipper to $0.77 from Northeast Shipper. We note that the price margin is what is left to pay for all other business expenses and profits. It is not an indication of profitability.

The retailer's price margin is the same for the three supply chains, because the price of the five-pound bag from Multi-Regional Grocery Wholesaler is the same regardless of where the potatoes were produced.

TABLE 6: Allocation of Retail Price of Russet Potatoes Sold by Multi-Regional Grocery Wholesaler to Baltimore Store 1

	Multi-Regional Grocery Wholesaler					
	Western Shipper				Midwest Shipper	
	Northeast Shippers		Western Shipper		Midwest Shipper	
Supply chain segment	Price margin ($/5-lb bag)	% of retail price	Price margin ($/5-lb bag)	% of retail price	Price margin ($/5-lb bag)	% of retail price
Shipper[1]	0.98	32.0	0.84	27.4	1.01	32.9
Transportation[2]	0.27	8.8	0.63	20.4	0.36	11.6
Multi-Regional Grocery Wholesaler	0.77	24.9	0.55	17.8	0.65	21.2
Transport	0.08	2.7	0.08	2.7	0.08	2.7
Retailer[3]	0.97	31.6	0.97	31.6	0.97	31.6
Total Retail Price	3.08	100.0	3.08	100.0	3.08	100.0

[1] USDA-AMS Market News Reports 2011-2012
[2] USDA-AMS Specialty Crops Truck Rate Reports 2011-2012
[3] Case study interviews

[5] Price margin is defined here as the sale price minus the purchase price.

Table 7 shows the distance and fuel used to get potatoes from the producer to the retailer. Transportation cost in the Western Shipper supply chain is greater than in the Northeast or Midwest supply chain, as can be expected.

TABLE 7: Food Miles and Fuel Use of Potatoes Sold by Multi-Regional Grocery Wholesaler to Baltimore Store 1

	Food miles	Truck miles[1]	Truck capacity	Fuel use[2]	Fuel use per cwt shipped
Supply chain segment	*number*		*cwt*	*gallons*	
Regional: Western Shipper/Northeast Shipper to Baltimore Store 1					
Shipper to M-R Grocery Wholesaler	927	927	400	154	0.39
M-R Grocery Wholesaler to Baltimore Store 1	154	154	400	26	0.06
All segments	1,081	1,081		180	0.45
Non-regional: Western Shipper to Baltimore Store 1					
Shipper to M-R Grocery Wholesaler	2,224	2,224	400	371	0.93
M-R Grocery Wholesaler to Baltimore Store 1	154	154	400	26	0.06
All segments	2,378	2,378		382	0.99
Non-regional: Midwest to Baltimore Store 1					
Shipper to M-R Grocery Wholesaler	1,023	1,023	400	170	0.43
M-R Grocery Wholesaler to Baltimore Store 1	154	154	400	26	0.06
All segments	1,177	1,177		196	0.49

[1] Truck miles are equal to food miles when potatoes travel over 150 miles. Trucks on trips longer than 150 miles will return with a backhaul.
[2] Miles per gallon (mpg) vary by segment. Trailer trucks used for shipping potatoes from the shippers to Grocery Wholesaler's distribution center and from the distribution center to the store have a capacity of 40,000 pounds and obtain 6 mpg.
Source: Author's calculations based on case interviews.

Prospects for Expansion of Regional Food System: Potatoes

We describe a regional supply chain that originates in the Northeast but where the Northeast growers supply Western Shipper with potatoes that are shipped from the Northeast packing sheds directly to Multi-Regional Grocery Wholesaler's distribution center in the Northeast. This distribution center in turn supplies Baltimore Store 1 with potatoes.

The store also buys 30 percent of its potatoes from a supplier other than Multi-Regional Grocery Wholesaler. We do not have information about this supply chain.

Key Lessons for Baltimore Store 1

Baltimore Store 1 is an independent supermarket located in the city of Baltimore, MD. The store purchases most of its supplies from City Grocery Wholesaler but also purchases from other suppliers including Multi-Regional Grocery Wholesaler. Multi-Regional Grocery Wholesaler is also the major supplier to City Grocery Wholesaler. The product supply chains described in this case are bread and potatoes.

Independent stores are often smaller companies that procure primarily from wholesalers, intermediaries between manufacturers and the store. In comparison, self-distributing supermarkets are large enough and have enough stores that they usually have their own warehouses and purchase directly from manufacturers.

The Store and Its Environment

Effect of size and economies of scale

- Baltimore Store 1 is an average size store of approximately 40,000 total square feet and independently owned. The store carries a full-line of grocery products, including meats, produce, and groceries. The owner describes it as a discount or "price impact" store.
- Although an average size store, it significantly outperforms the average supermarket store in several key metrics, including weekly sales, weekly sales per square foot, and weekly sales per full-time employee. Sales from its meat department also are significantly greater than average, although sales of produce are much less.
- This store is self-distributing through City Grocery Wholesalers but on a smaller scale than larger chain supermarkets. The common ownership between the store and its self-owned wholesaler gives the store an opportunity to procure products at lower costs than other single-store operators. The wholesaler buys from Multi-Regional Grocery Wholesaler but in larger volumes than a single store would be able to order. In addition, the wholesaler buys directly from manufacturers for some items.
- However, the self-distributing activity also adds another supply chain member that needs to operate profitably to maintain the activities it performs for its store and its other clients.

Effect of ownership structure on the supply chains

- The store benefits from having a wholesaler that is owned by the same entity, although set up as a separate business. Under the same owner, the wholesaler is better aligned with the

interests of the store, and at the same time, the store is able to align its assortment to take advantage of its wholesaler's ability to procure items at a cost advantage.

Market Basket Supply Chains

Effect of regional production/industry

- The Northeast produces potatoes. While the store's largest potato supplier is a shipper located in the West, regional production allows Western Potato Shipper to engage regional producers to supply Multi-Regional Grocery Wholesaler's and the store's needs. Because Multi-Regional Grocery Wholesaler is a large national wholesaler it relies on Western Potato Shipper to coordinate needs for several warehouses. Western Potato Shipper can use regional producers as it optimizes transportation, availability, and warehouse demands.
- Researchers from Tufts University estimate that if the Northeast consumed all the potatoes it produced, this would amount to about 38 percent of its potato consumption.[6]

Effect of geography/distance

- Because the bread manufacturer is located so close, within 20 miles, the wholesaler is able to pick up bread with his own trucks and acts as its own direct store deliverer. This is a part of a typical bread supply chain that delivers bakery products daily to stores on its route and performs transportation, shelving and product rotation. Bakeries have historically been located very close to consumption because of the perishability of their products.

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[6] Timothy Griffin, unpublished data. Tufts University, Boston, MA.

Appendix

Packaged Bread Industry Profile

Consumption

Retail supermarket sales of packaged bread have been stagnant throughout the early decade 2011-2015 (Table A.1). Most of the weakness in the market has been for traditional white sandwich-style breads. Declining sales for these white breads have been offset somewhat by interest in artisanal, whole grain and multi-grain breads as well as those made with sprouted grains.

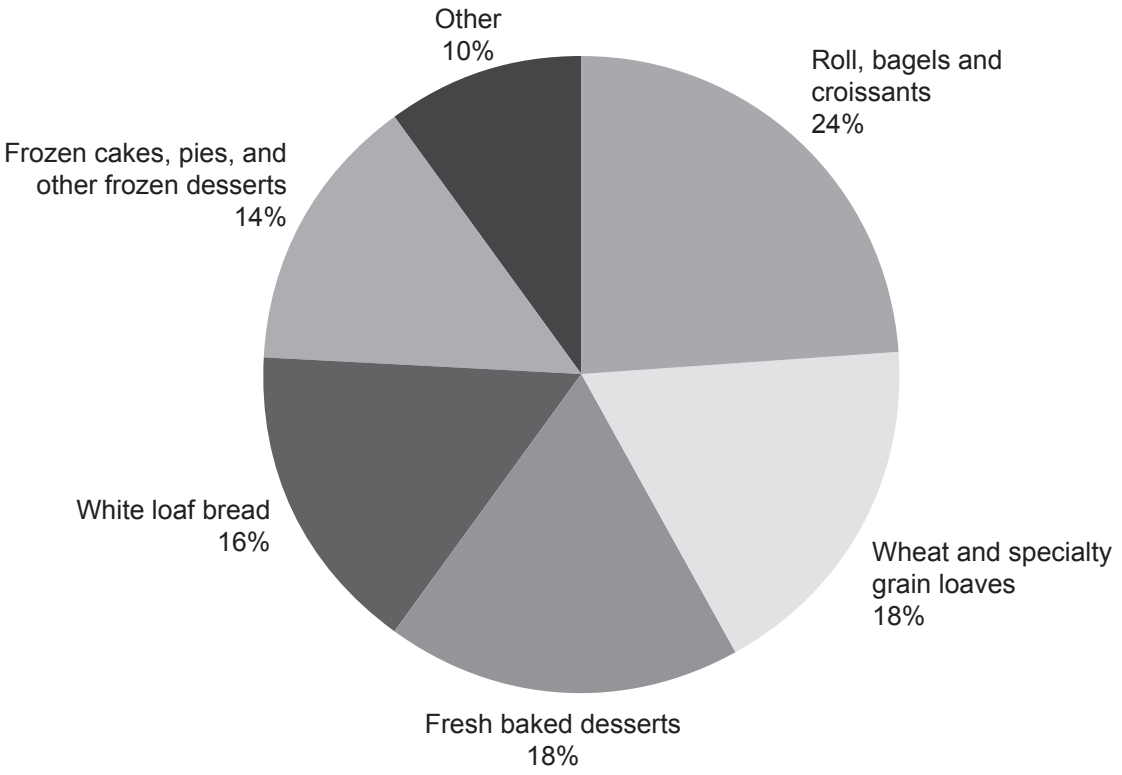
TABLE A.1: Supermarket Fresh Bread

	$/store/week	% change from previous year	Average retail price per unit
2011	$1,979	1.3	$2.37
2012	$1,741	-1.6	$2.33
2013	$1,760	0.2	$2.37
2014	$1,760	0.6	$2.26
2015	$1,746	-0.8	$2.26

Source: Progressive Grocer, "Retail Bakery Review". Various issues.

Although wheat and specialty grain loaves are outselling white loaf bread (Figure A.1), even whole wheat conventional bread sales are slipping while demand for whole grain and specialty grain breads have increased. Gluten-free, GMO-free and organic breads are also seeing increasing demand in the otherwise mature bread market. Reasons for the weak demand for breads could include several factors, including changing consumer eating habits, interest in gluten-free foods, and other health trends.

FIGURE A.1: Bakery Product Sales



IBISWorld Industry Report, "Bread Production in the US". September 2016.

Manufacturing

The U.S. 2012 Economic Census reports total bakery sales of over $31.1 billion from 9,175 establishments (Table A.2). Commercial bakeries, those primarily engaged in manufacturing fresh and frozen bread and bread-type rolls and other fresh bakery products, report almost 90 percent of the total bakery sales. Retail bakeries, those that sell and make bakery products on the premise, account for only 10 percent of total bakery sales.

The Northeast contains 29.4 percent of the commercial bakery establishments and 31.3 percent of the retail bakeries.

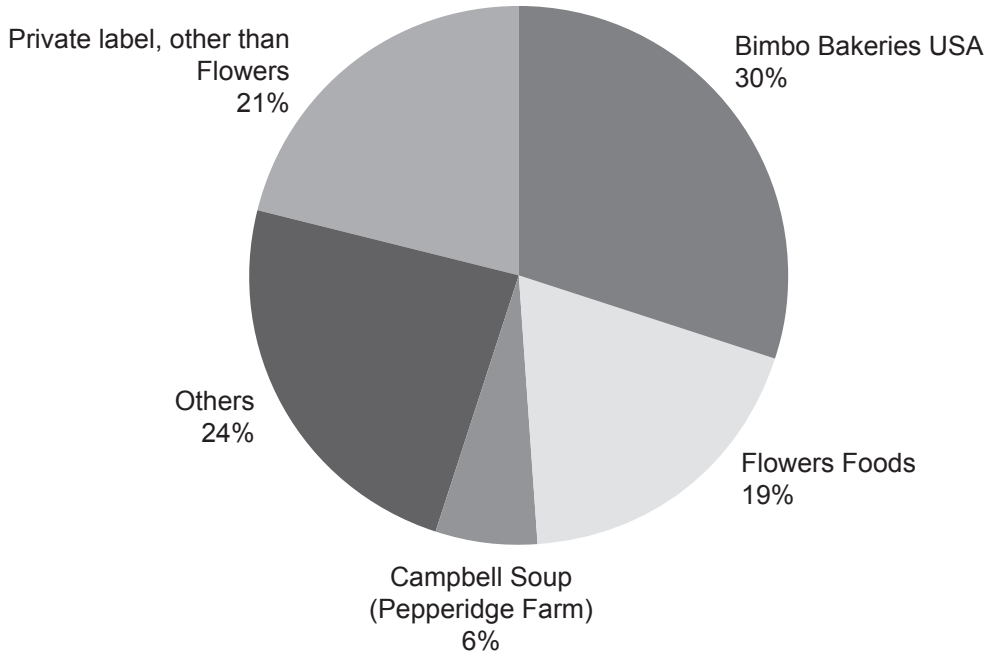
TABLE A.2: U.S. Bakeries, 2012

	U.S.	Northeast	
		number	% of U.S.
Commercial Bakeries			
Establishments, number	2,662	783	29.4%
Sales, *$1,000*	$27,934,447	na	na
Retail Bakeries			
Establishments, number	6,513	2,038	31.3%
Sales, *$1,000*	$3,140,696	na	na
All Bakeries			
Establishments, number	9,175	2,821	30.7%
Sales, *$1,000*	$31,075,143	na	na

Source: Bureau of the Census, 2012 Economic Census.

The commercial bakery industry is somewhat concentrated. Estimates from IRI report the top three manufacturers produce 55 percent of bakery sales at retail.[7] These leading manufacturers are Bimbo Bakeries USA, Flowers Foods, and Campbell Soup Company (Pepperidge Farm). The remaining companies are smaller regional bakers, local bakers and retailer-owned bakeries (Figure A.2).

FIGURE A.2: Commercial Bakeries, Share of Sales at Retail



Source: Flowers Foods Annual Report 2016. Based on IRI Flowers custom database 52 weeks ending 1/1/2017.

[7] Flowers Foods Annual Report, 2016.

The majority of breads are sold through retail grocery stores. After manufacturing, bread is distributed to store customers usually through a direct-store-delivery (DSD) system. Dedicated franchisees or bakery employees are responsible for distributing the bread products to a specific route or group of store customers. They routinely inventory product on the store shelves, place orders for the store, stock the store; and invoice the store customer as well as load the trucks at the plant and drive and deliver the products. A small portion of product is delivered to retail-owned distribution centers where it is then delivered by the retailer to its stores.

Wheat production and milling industry

The primary ingredient in bread products is wheat flour. It comprises 55-60 percent of the raw ingredients by weight. Wheat quality, supplies, and prices are, therefore, very important in bread manufacturing. Bread manufacturers generally use hard wheats which have higher protein levels than soft wheat which is used primarily in cakes, cookies, and pastries.

The leading wheat producers in 2015 were North Dakota, Kansas, Montana, Washington, and Texas.[8] For hard wheat production, which is preferred for bread making, Kansas is the leading producer. Although some wheat is grown in 42 of the 50 states, none of the top 10 state producers is in the Northeast. In 2015, the Northeast states produced 3.9 percent of the wheats grown in the U.S. (Table A.3).

TABLE A.3: U.S. Wheat Production, 2011-2015

	2015	2014	2013	2012	2011
	1,000 bushels				
U.S., All wheat	2,061,939	2,026,310	2,134,979	2,252,307	1,993,111
Northeast, All wheat	79,525	75,188	86,952	76,242	83,518
Northeast as % of U.S.	3.9	3.7	4.1	3.4	4.2

USDA-National Agriculture Statistics Service, QuickStats, downloaded 4-18-2017.

Flour mills were originally found close to production as it was more convenient and just as economical to mill close to the source. Since railroad deregulation in the early 1980s and the development of rail transport technology, it has been more costly to ship flour than to ship wheat. Flour mills now are more commonly built closer to areas of consumption at or near large urban centers.

[8] USDA-National Agriculture Statistics Service, QuickStats, downloaded 4-18-2017.

The U.S. Census reported 168 flour milling companies in 2012 down slightly from 171 in 2007 (Table A.4). The value of shipments in 2012 was reported to be $15.3 billion up from $9.8 billion in 2007. In 2012 in just New York and Pennsylvania, flour mills had product shipments of $1.6 billion, over 10 percent of the U.S. total. Data for the other states in the Northeast were withheld to avoid disclosing the operations of individual firms.

TABLE A.4: Flour Milling

Flour Milling	Number of companies	Number of establishments	Product shipments, value ($1,000)
U.S. 2012	168	305	15,262,220
U.S. 2007	171	290	9,812,455
Northeast 2012	NA	33	1,584,326
Northeast 2007	NA	35	NA

Source: Bureau of the Census, 2012 Economic Census.

Potato Industry Profile

According to the National Agricultural Statistics Service (NASS) Survey, in 2015 the U.S. produced 441,205 hundredweight (cwt) of potatoes for both fresh use and processing (Table A.5). Idaho produces approximately 30 percent of total U.S. production. Although potatoes can be grown year-round in parts of the U.S., potatoes harvested in the fall account for the majority, 92 percent, of production.

The Northeast region produced 23,759 cwt of potatoes, totaling 5.4 percent of U.S. production. The states in the Northeast that report production are Maine, Maryland, Massachusetts, New York, Pennsylvania, and Rhode Island.

TABLE A.5: 2015 Potato Production in the Northeast

State	Production	Value
	1,000 cwt	*thousands of dollars*
U.S.	441,205	3,865,538
Northeast Region	23,759	252,684
Maine	16,160	163,216
Maryland	792	8,316
Massachusetts	1,098	11,419
New York	4,144	50,557
Pennsylvania	1,484	18,253
Rhode Island	81	923

Source: USDA, NASS. "Potatoes: 2015 Summary," July 2016. http://usda.mannlib.cornell.edu/usda/current/Pota/Pota-09-15-2016.pdf.

Although potato production yields in the Northeast are significantly lower than the U.S. average, higher potato prices help reduce the impact of the lower yields (Table A.6).

TABLE A.6: 2015 U.S. and Northeast Potato Statistics

Source	Variable	U.S.	Northeast	Northeast, % of U.S.
1	Production *1000 cwt*	441,205	23,759	5.4%
1	Value *$1,000*	$3,865,538	$252,684	6.5%
1	Acres harvested *1,000*	1,054	77	7.3%
1	Yield per acre c*wt*	418	275	65.8%
1	Value of production *$1,000*	$4,237,284	$252,684	6.0%
1	Price received $ *per cwt*	$8.76	$11.15	127.3%
2	Utilization per capita, fresh *lbs*	34.0		
2	Utilization per capita processing	79.7		

NOTE: Northeast totals may be low because several states do not report.

Sources:

[1] USDA, NASS. "Potatoes: 2015 Summary," July 2016. http://usda.mannlib.cornell.edu/usda/current/Pota/Pota-09-15-2016.pdf.

[2] "USDA, ERS - Food Availability (Per Capita) Data System." Accessed January 19, 2017. https://www.ers.usda.gov/data-products/food-availability-per-capita-data-system/.

In 2015, 25 percent of the U.S. potato crop was for fresh use while 62 percent was for the processing market. With respect to retail sales, potatoes were the third highest selling vegetable item in 2015 (Table A.7).

TABLE A.7: Top 5 Retail Vegetable Items

U.S. Retail Produce Sales for 52 weeks ending 12/26/2015

Item	Average $ per store per week
Packaged Salad	3,607
Tomatoes	3,005
Potatoes	2,656
Cooking vegetables	2,519
Value-Added Vegetables	2,519

Source: "FreshFacts on Retail: 2015." United Fresh Produce Association and Nielsen Perishables Group, January 2016.

Retailers keep potatoes in the store year round, stocking different varieties and selections of bagged and bulk (loose) potatoes. Potatoes can be stored, usually by the producer or packer, for most of the year, with most potatoes being harvested in the fall. In order to maintain stock, retailers will bring in potatoes grown in different regions. Purchasing from different growing regions provides risk insurance in case of regional crop failures.

OTHER A.E.M. EXTENSION BULLETINS

EB No	Title	Fee (if applicable)	Author(s)
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2017-05	Exploring the Feasibility of a Rural Broadband Cooperative in Northern New York		Schmit, T.M. & R.M. Severson
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2016-08	Dairy Farm Business Summary, Northern New York Region, 2015	($16.00)	Knoblauch, W., Dymond, C., Karszes, J., Howland, B., Murray, P., Manning, J. and Kimmich, R.
2016-07	Dairy Farm Business Sumarry, Hudson and Central New York Region, 2015	($16.00)	Knoblauch, W., Dymond, C., Karszes, J., Howland, B., Buxton, S., Kiraly, M., Kimmich, R., Shoen, K., and Overton, R.

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